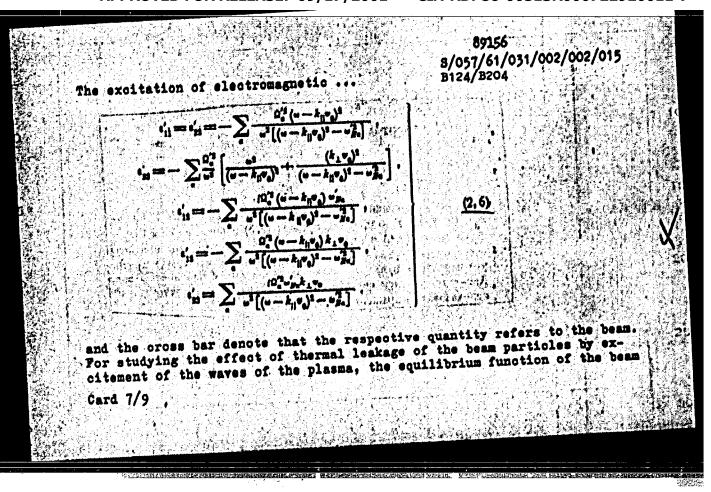
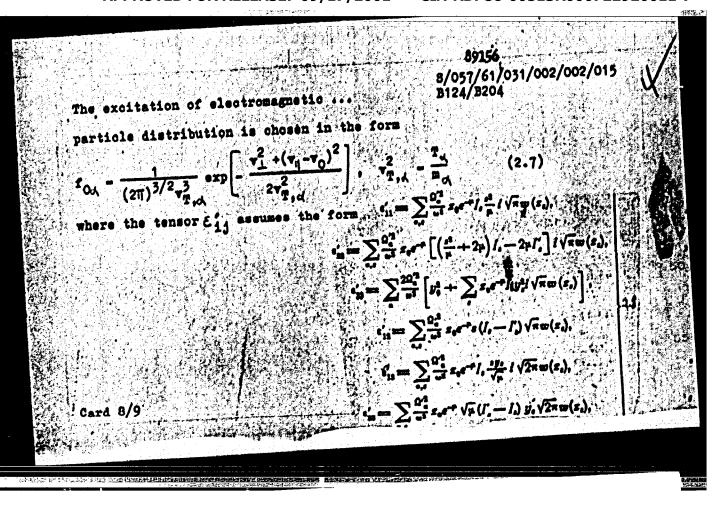
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The excitation of electromagnetic	89156 B/057/61/031/002/002/015 B124/B204
$\frac{1}{4a} = \sum_{i=1}^{2a} \sum_{i=1}^{2a} \left[ v_i dv_i v_i dv_i + \frac{R_i J_i^2}{2a} \right]$ $\sum_{i=1}^{2a} \sum_{i=1}^{2a} \sum_{i=1}^{2a} \left[ v_i dv_i v_i dv_i + \frac{R_i J_i^2}{2a} \right]$	사고 하다 뭐 하는 아니라 다른 살살을 다 걸다면 하게 하는데 살아 있다. 그리고 있는데 사람들이 없다.
$R_{a} = \frac{4\pi a^{2} m_{a}}{m_{a}},  u_{a} = \frac{4\pi a^{2}}{m_{a}},  a = \frac{4\pi a^{2}}{m_{a}},  b $	
Jac J (a) is a Bessel function, J' = J'(a) is in the the density and equilibrium function of the two tinds of The functions for depend on V	distribution of the particular and v <sub>ii</sub> (v <sub>i</sub> and v <sub>ii</sub> are the
components of particle velocity which are perpendicular. The summation in (2.3) is carried out over that 5/9	MINITER BROKUL DALGATO TO SERVER SERVER

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	14 dub to the	presence of the			
velocity of t into account, Card 6/9	he beam, the th	and F. Jan H. ermal motion of th	o particles need	not be taken	
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8/057/61/031/002/002/015 B124/B204

The excitation of electromagnetic ...

where I = I (µ) is a modified Bessel function, I' = dI /44,

=  $k^{T}A^{\mu \cdot \nu}/n^{H^{\gamma}}$ ,  $a^{\alpha} = (m - \alpha n^{\mu} - k^{\mu}A^{0}) / - (5k^{\mu}A^{\mu\alpha}A^{\alpha} = (m - \alpha n^{\mu}A^{\alpha}) / \sqrt{5}k^{\mu}A^{\mu\alpha}$ ,

and w(s,) is the probability integral. In the further course of the work, equations are derived for the electron longitudinal oscillations, the quasilongitudinal propagation as well as the ion-oyolotron and magnetohydrodynamio waves. Mention is made of A. I. Akhiveser, V. V. Zhelesnyakov, Ya. B. Faynberg, and V. P. Dokuchayev. A. I. Akhiyezer and V. F. Aleksin are thanked for discussion and valuable advice. There are 12 references: 10 Soviet-bloo and 2 non-Soviet-bloc.

ASSOCIATION: Fisiko-tekhnicheskiy institut AN USSR, Khar'kov (Institute of Physics and Technology AS UkrSSR, Khar'kov)

May 9, 1960 SUBMITTED:

Card 9/9

26.2330		8/057/61/031/002/003/015 B020/B067
AUTHORS: Kits		
TITLE:	otron instability in pla	*** 31, no. 2, 1961, 176-179
	that the anisotropy of	the equilibrium distribution to
plasma electrons ties. The presenting homogeneous	and ions with respect to t paper deals with the in magnetic field H if ions	velocity may lead to instabili- netability of an unbounded plasma with an equilibrium distribution
function of the f	orm (1)	
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	stability in plasma		e - and frequent	ies which
that disturb	ances of a wavelengt or a multiple of th	h of the order o	W are unstable	(oyolotron
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form (2),	$=-\frac{\alpha_1}{\sigma^4}\left[1+\sum_{n=1}^{\infty}\left(\frac{2\sigma_{n}n}{\sigma^2}\right)\right]$	Jose + ely bugh Ja		
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t <sub>p</sub> :	$= -\frac{\Omega^2}{\sigma^2} \left[ 1 + \sum_{i=1}^n \left( -\frac{\sigma_{ij}n}{\sigma^2} \right) \right]$	Now (m, - un')	[]] 4]	
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i. = 10 - 3	Di - [2]
$I_{ij} = -I \stackrel{\mathcal{B}}{\rightarrow} \sum_{i} \left( \frac{\sigma_{ij} a^{2}(\omega) J_{i}^{2}}{(\sigma - m \omega)^{2}} + \frac{\sigma_{ij}^{2} a \omega_{j}^{2} \sigma_{i}^{2} J_{i}^{2}}{(\sigma - m \omega)^{2}} \right) - \frac{m^{2}}{\sigma_{ij}^{2}}, \qquad (2)$	
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	B - 5
4=1-3. \(\sum_{\frac{1}{2}}\) \(\frac{1}{2}\) \(\frac{1}{2}\) \(\frac{1}{2}\)	· V · High
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where $\Omega = (4\pi e^2 n/H)^{1/2}$ the Langmuir ion frequency, 0 the angle between where $\Omega = (4\pi e^2 n/H)^{1/2}$ the Langmuir ion frequency, 0 the angle between	
the wave vector k and Ho; En action with respect to a; sel function; the prime denotes the differentiation with respect to a; sel function; the prime denotes the differentiation with respect to a;	<b>23</b> : [3]
sel function; the prime denotes the utility was 03 is parallel to $H_0$ , the $\omega^* = \omega^2$ is the complex frequency. The axis 03 is parallel to $H_0$ , the $\omega^* = \omega^2$ is the complex frequency. If the electrons have	
$\omega' = \omega^2$ is the complex frequency.  axis 01 lies in the plane of the vectors k and $H_0$ . If the electrons have	
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yclotron instability in plasma	
$w(z) = -i \left( \frac{2i}{ z } + \frac{2i}{\sqrt{2}} \left( e^{z} dz \right),  z = \frac{72}{\sqrt{2}} z_{1} z_{2} \right)$ $w(z) = -i \left( \frac{2i}{ z } + \frac{2i}{\sqrt{2}} \left( e^{z} dz \right),  z = \frac{72}{\sqrt{2}} z_{1} z_{2} \right)$	
here Q the Langmuir electron frequency. The solutions are then here Q the Langmuir electron frequency. The solutions are then here Q	
or the dispersion relations of the dispersion (4).	
the quantity a = k,r is not too low and the number of the harmonics so the quantity a = k,r is not too low and the number of the harmonics so too high, the last summands for fig in equation (2)~1/(ω!-sug)? are the highest. Taking account of this fact	***
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Cyclotron instability in plasma	<b>\</b> \.
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the order of $r_0$ , for which growth frequency and introduced the order of $\omega_{\rm H}$ . In this case $\omega$ and $r$ can be determined only numerically.	
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ASSOCIATION: Fisiko-tekhnicheskiy institute the AS UkrSSR, Khar'kov) of Physics and Technology of the AS UkrSSR, Khar'kov)	
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24,6716 AUTHOR:

Kitsenko, A. B.

TITLE

Card 1/3

Character of the instability in the interaction of a beam with plasma in an outer magnetic field

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31. no. 10. 1961, 1270 - 127;

B111/B112

TEXT: A convective instability can only be eliminated if its character is known. This article deals with the excitation of h-f longitudinal electron oscillations during the passage of a charged particle beam through plasma oscillations during the passage of a charged particle beam through plasma on an outer magnetic field. The resulting instability is convective in the absence of a magnetic field (Ref. 3. see below). A similar instability occurs in an outer magnetic field due to cyclotron excitation on the basis of the anomalous Doppler effect. This instability is investigated in the following. Integrals of the form  $\int_{a(k)}^{a(k)} e^{ikT} - iit dk describe the electric and the magnetic field atrength and can be used to distinguish between the absolute and the convective instability if this integral tends to zero for any constant <math>T$  with  $t \to \infty$ , the instability will be tends to zero for any constant T with  $t \to \infty$ , the instability in integral convective, and if it tends to infinity, it will be absolute. The integral

28781 8/057/61/03//010/015/015 B 11 / B 2 Character of the instability in the des where C to the mapping of may also be written as the real axis of the k-plane on the 6 plane which dw/dk = 0, are found from the dispersion equation to be - WH(1 + 7 = V(1 + 7)2 - 4008207)/27 where  $\omega_{\rm H}$  is the electron cyclotron frequency; Leard 2  $\eta = \frac{\Omega^2}{\Omega^2}$ , where  $\omega_H$  is the electron cyclotron frequency; it and we are the Langmuir frequencies of plasma and beam; if is the angle he tween H and K. The dispersion equation shows that C cuts the tragicary exis only in W= 0. The contour C can be deformed such that it lies in the lower semiplane to, i.e., that the integral for the tends to zero. K. N. Stepanov, R. V. Polovin, and V. D. Shapiro are thankel for dische sions. There are 5 references: 3 Soviet and 2 non-Soviet Ref 3: Ya. B. Faynberg et al., ZhTF. 31, 633, 1961. The two references to English-language publications read as follows: Ref. 1: P. A. Sturrock, Phys. Rev., 112, 1488, 1956; Ref. 2: P. A. Sturrock, Phys. Rev., 117 Card 2/3

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Character of the instability in the . . B111/B112

1426, 1960.
ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR Khar'kov (Physico-technical Institute, AS UkrSSR, Khar'kov)

SUBMITTED: February 28, 1961

25206 8/056/61/040/006/027/031 B125/B202

Akhiyezer, A. I., Kitsenko, A. B., Stepanov, K.

AUTHORS: TITLE:

Interaction between charged particle currents and

low-frequency plasma oscillations

PERIODICAL:

Zhurnal eksperimental noy i teoreticheskoy fiziki,

no. 6, 1961, 1866-1870

TEXT: The authors deal with the interaction between a compensated beam of charged particles and the low-frequency oscillations of a plasma (mainly with the magneto-acoustic waves and the Alfven waves) in a constant field in parallel direction to the beam and in the absence of collisions. If the plasma is rarefied to such an extent that the frequency w of the oscillations is much higher than the frequency 1/2 of the collisions, the plasma oscillations must be described on the basis of the kinetic equation. With week 1 the plasma can be described hydrodynamically. The authors studied the case wr >> 1. The general dispersion equation for plasma oscillations in an external magnetic field with random distribution function of the particles with respect to the velocities

Card 1/7

Interaction between charged ... 8/056/61/040/006/027/031Freads as follows:  $An^4 + Bn^2 + C = 0$  (1) where  $n = kc/\omega$ . The wave vector K and the quantities A, B, and C are determined by the components of the tensor of the dielectric constant  $t_1$ . Purthermore, it is assumed that  $\omega \ll \omega_{\rm Hi}$ ,  $kv_0 \ll \omega_{\rm Hi}$  where  $\omega_{\rm Hi}$  is the gyrofrequency of the ions,  $v_1 = (T_1/k)^{1/2}$  the mean thermal velocity of the ions ( $T_1$  denotes the temperature and k the mass of the ions) and  $v_0$  the velocity of the beam. Under these conditions (1) falls into the equations  $(ko/\omega)^2 \cos^2 \theta - \xi_{11} = 0$  (5) and  $(ko/\omega)^2 - \xi_{22} - \xi_{23}^2/\xi_{33} = 0$  (4) describing the Alfvén wave and the sound wave, respectively. If the velocity distribution of the particles in the beam,  $t_1 = m_1(v - v_0)^2$  (5) (n' density of the particles in the beam,  $T_1$ ,  $T_1$  temperatures of the electrons and ions of the beam,  $m_0 = m_1$ ,  $m_1 = m_2$ 

Interaction between charged ... 
$$8_{12} = 1 + \sum_{n} \frac{\Omega_{n}^{2} (\omega - h_{1} v_{0})^{2}}{\omega_{H_{0}}^{2} \omega_{n}^{2}}, \quad e_{12} = e_{11} + \sum_{n} \frac{\Omega_{n}^{2} h_{n}^{2}}{\omega_{H_{0}}^{2} \omega_{n}^{2}} 2l \sqrt{\pi} \sin^{2}\theta z_{n} \omega(z_{n}),$$

$$e_{12} = 1 + \sum_{n} \frac{\Omega_{n}^{2}}{\omega_{H_{0}}^{2}} (1 + l \sqrt{\pi} z_{n} \omega(z_{n})),$$

$$e_{23} = 1 + \sum_{n} \frac{\Omega_{n}^{2}}{\omega_{H_{0}}^{2}} \sqrt{\pi} \lg \theta z_{n} \omega(z_{n}), \qquad (6)$$

$$\pi \lambda_{1} = \sum_{n} \frac{\Omega_{n}^{2}}{\omega_{H_{0}}^{2}} \sqrt{\pi} \lg \theta z_{n} \omega(z_{n}), \qquad (6)$$

$$\omega(z_{n}) = e^{-\frac{u^{2}}{n}} \left(\pm 1 + \frac{2l}{\sqrt{\pi}} \int_{0}^{z_{n}} e^{r_{n}} dl\right), \quad z_{n} = \frac{\omega - k_{1} v_{0}}{\sqrt{2k_{1} v_{n}}},$$

$$\Omega_{n}^{2} = 4\pi e^{2} n_{n} dm_{n}, \quad \omega_{n} = -z_{n} H_{n} dm_{n}, \quad k_{1} = k \cos \theta$$
holds with Maxwellian equilibrium velocity distribution of the electrons and ions of the plasma. The upper and lower signs in  $\omega(z_{n})$  hold with and ions of the plasma and the beam. With the aid of (6) expression
$$\omega(z_{n})^{2} \pm l(\Omega)^{2} + \Omega_{1}^{2} e^{-k} dl - \Omega_{1}^{2} \Omega_{1}^{2} v_{0}^{2} v_{0}^{2}$$

$$\omega = k_{1} \frac{\omega(z_{n})^{2} \pm l(\Omega)^{2} + \Omega_{1}^{2} e^{-k} dl - \Omega_{1}^{2} \Omega_{1}^{2} v_{0}^{2} v_{0}^{2}}{\Omega_{1}^{2} + \Omega_{1}^{2}} \qquad (7)$$
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THE VA - HAIVARDA	$M_{\bullet}$ $V_A = H_{\bullet} / \sqrt{4\pi n'_{\bullet} M}$	on a dialinge d Attraction		
4. engrilled. With suffici	ently low densities	to annulate	the excitation	
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Alfyen waves and the magnet	ility is observed a	led with thou	e densities at	10 March 1997
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the magneto-acoustic waves as compared to the plasma d	ensity. With ky.«	wkky the	solution of the	
dispersion equation (4) has	the form	a a saifin		17.0
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with lacking beam, where s	tude s. In this ca	se the condit	TOU MENKAT	1
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Interaction between charged ...

holds only for a strongly nonisothermal plasma  $(T_o)$   $T_1$  while the magneto-acoustic waves with  $T_o \leq T_1$  are strongly attenuated. Besides, also  $|\omega - k_{||} v_0| > kv'$  holds. The dispersion equation (4) then reads as follows:  $\omega = k_{||} v_0 + \mathcal{E}(10)$  with  $|\mathcal{E}| \ll |k_{||} v_0|$ . Under the conditions studied, the state of the system plasma-beam is unstable due to the excitation of the magneto-acoustic waves. If  $v_0$  does not lie in the interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with neglection of interval  $s < v_0 < V_A$  this instability occurs even with ne

$$\mathbf{g} \approx \left(\frac{M}{m}\right)^{1/\epsilon} \mathbf{g}_0 = \pm \frac{\Omega_{\epsilon}' \left[n^3 - \mathbf{g}_{22}^{(o)}\right]^{1/\epsilon}}{\left[\mathbf{g}_{22}^{(o)} \left(n^3 - \mathbf{g}_{22}^{(o)}\right) - \mathbf{g}_{22}^{(o)}\right]^{1/\epsilon}},$$
 (14)

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8/056/61/040/006/027/031 B125/B202

Interaction between charged ..

is obtained with neglection of the thermal motion of the electrons of the beam. E ij is the component of the tensor of the dielectric constant of the plasma without beam with w= knvo. An instability also occurs with  $T_e \lesssim T_i$  if the plasma oscillations are weakly attenuated. With  $kv_1^* \ll |\omega - k_{11}v_0^*| \ll kv_0^*$  the thermal motion of the electrons in the beam has to be taken into account. (4) then has the solution W = ky v + E of  $|E_0| \ll k_{\parallel} v_0 |$  (15) where  $E_0$  is obtained from (14). If  $k_{\parallel} v_0$  lies near the eigenfrequency kV, of the magneto-acoustic wave in the nonisothermal plasma  $W = kV_{\pm} + E_0$ ,  $|k(v_0\cos\theta - V_{\pm})| \ll |E_0|$  (16) holds where  $E_0$  is to be determined from (13). These formulas hold for sufficiently low temperatures of the beam  $|\omega - k_{\parallel} v_{0}| \gg kv_{\parallel}$ . With sufficiently small  $n_{0}^{i}/n_{i}$ W=W+ + if holds with

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25206 5/056/61/040/006/027/031 B125/B202

Interaction between charged ...

A beam with low density and high energy spread of the electrons and ions generally does not cause a magneto-acoustic wave in the plasma. There are 9 references: 7 Soviet-bloc and 2 non-Soviet-bloc. The two most recent references to English-language publications read as follows: D. Bohm, E. Grose. Phys. Rev. . 75. 1851. 1864, 1949. I.B. Bernetein. R.M. Kulsrud. Phys. Fl., 2, 937, 1960.

ASSOCIATION:

Piziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Institute of Physics and Technology of the Academy of

Sciences of the Ukrainskaya SSR)

SUBLITTED:

January 27, 1961

card 7/7

35355 8/057/62/032/003/006/019 B116/B102

AUTHORS:

Kitsenko. A. B., and Stepanov, K. N.

TITLE:

Excitation of magnetosonic waves in dilute planma by a charged particle flow

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 3, 1962, 303 - 307

TEXT: The excitation of "fast" and "slow" magnetosonic maves in dilute plasma by a charged particle flow of arbitrary density was studied. The plasma by a charged particle flow of arbitrary density was studied. The following assumptions were made: The Alfvèn velocity is much greater than the sonic velocity, plasma and particle flow are dilute so that "near" collisions may be neglected, space charge and electric current "near" collisions may be neglected, space charge and electric current of the particle flow are compensated in the state of equilibrium. The dispersion equation for magnetosonic waves

 $\frac{k^2c^2}{\omega^2} = \frac{\epsilon_{2j}}{22} = 0$  (1) is written down, where  $\epsilon_{ij}$  is the tensor of the dielectric constant (axis 3 runs parallel to the external magnetic field  $\epsilon_{ij}$ , the wave vector  $\epsilon_{ij}$  is the tensor of the dielectric constant (axis 3 runs parallel to the external magnetic field  $\epsilon_{ij}$ , the wave vector  $\epsilon_{ij}$  is in the 1-3 plane). (1) holds if  $\epsilon_{ij}$ 

Card 1/5

S/057/62/032/003/006/019 B116/B102

Excitation of magnetosonic ...

kv1 & 111, kv0 & H1, where H1 and v1 = hydrogen frequency and mean thermal velocity of ions respectively,  $v_0$  = beam velocity  $(\vec{v}_0 \parallel \vec{H}_0)$ . beam and plasma particles show Maxwellian velocity distribution, the

components of 211 are:

$$s_{11} = 1 + \sum_{a} \frac{\Omega_{a}^{2} (\omega - k_{1} v_{a})^{2}}{\omega_{Ha}^{2} u^{2}},$$

$$s_{22} = s_{11} + \sum_{a} \frac{\Omega_{a}^{2} k^{2} v_{a}^{2}}{\omega_{Ha}^{2} u^{2}} 2i \sqrt{\pi} \sin^{40} z_{a} w(z_{a}),$$

$$\epsilon_{ss} = 1 + \sum_{a} \frac{\Omega_{a}^{0}}{k_{0}^{1} \sigma_{a}^{0}} (1 + i \sqrt{\pi} z_{a} \omega(z_{a})),$$

$$s_{22} = -\sum_{\alpha} \frac{\Omega_{\alpha}^{2}}{w_{\beta,\alpha}} \lg \phi \sqrt{\pi} \, s_{\alpha} w (s_{\alpha}),$$

$$w(z_s) = e^{-r_0^2} \left( \pm 1 + \frac{2l}{\sqrt{s}} \int_0^{r_0} e^{l^2} dl \right), \quad z_s = \frac{\omega - k_1 v_0}{\sqrt{2} k_1 v_s},$$

$$\Omega_{0}^{1} = \frac{4\pi e^{2}n_{00}}{m_{0}}, \quad v_{0}^{2} = \frac{T_{0}}{m_{0}}, \quad w_{R0} = \frac{e_{0}H_{0}}{m_{0}}, \quad k_{0} = k\cos\theta,$$

Card 2/5

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Excitation of magnetosonic ...

O is the angle between k and Ho. First, the oscillations corresponding to the "fast" magnetosonic wave are investigated. It is assumed that  $\frac{1}{k} > v_i$ ,  $v_i$ ,  $v_0 = \frac{1}{m/1}$ ,  $v_0 = \frac{1}{m/2}$ , the indices e and i denote electrons and ions respectively, the primes refer to beam particles. The solution of (1) is ω=ω<sub>+</sub>, where

 $u_{\pm} = k \frac{n'_{0}v_{0}\cos\theta \pm \sqrt{n'_{0}n_{0}(V_{A}^{2} + V_{A}^{2} - v_{0}^{2}\cos^{2}\theta)}}{n'_{0} + n_{0}}$   $V_{A} = \frac{H_{0}}{\sqrt{4\pi n_{0}M}}, \quad V_{A}' = \frac{H_{0}}{\sqrt{4\pi n_{0}M}}.$ 

From (3) follows the instability condition  $v_0^2 > v_A^2 + v_A^{+2}$ . Consideration of the kinetic effects shows that instability may also occur at  $v_0^2 < v_A^2 + {v_1}^2$ . In this case,  $\omega = \omega_{\pm} + i\gamma_{\pm}$ ,  $|\gamma_{\pm}| \ll |\omega_{\pm}|$ . On the above assumptions, the dispersion equation for "slow" magnetosonic waves reads  $\varepsilon_{33}(\omega,k) = 0$  (6). For the case  $|\omega - k_{11}v_0| \gg kv_0^2$ , (6) gives Card 3/5

(8)

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Excitation of magnetosonic...

$$\frac{\Omega_i^2}{u^2} \to \frac{\Omega_i^4}{(u - k_1 \sigma_0)^2} = \frac{\Omega_i^4}{k_1^2 s^2} (1 - i \sqrt{\kappa} z_0), \tag{7}$$

where s =  $T_e/M$  is the sonic velocity,  $z_e = \frac{3}{\sqrt{2|k_1|v_e}} (z_e/41)$ .

 $v_0^2 < \frac{s^2}{n_0} \left[ n_0^{1/s} + \left( n_0' \frac{M}{m} \right)^{1/s} \right]^2$ the instability condition

is obtained. Explicit formulae for the increments γ can be obtained from (7) for some limiting cases only. For the case kv κ ω ω κ ω ν ο κ κν ε, (6) gives

 $\frac{\Omega_{i}^{2}}{\omega^{2}} + \frac{\Omega_{i}^{\prime 2}}{(\omega - k_{1} v_{0})^{2}} = \frac{\Omega_{i}^{2}}{k_{1}^{2} s^{2}} (1 + i \sqrt{\pi} z_{0}) + \frac{\Omega_{i}^{\prime 2}}{k_{1}^{2} s^{\prime 2}} (1 + i \sqrt{\pi} z_{0}'),$ 

Neglecting  $z_i$  and  $z_i'$ , the instability condition  $v_0^2 < \frac{1}{n_0 s_1^2 + n_0 s_1^2}$ Card 4/5 (13).

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Excitation of magnetosonic...

is obtained. The solution of (12) can be found explicitly in some special cases. For  $|\omega - k_{\parallel} v_0| \ll k v_1^2$ , (7) gives  $\omega = k_{\parallel} u + i\gamma$ , where

$$\frac{1}{14} = \frac{1}{s^2} + \frac{n_0}{n_0} \left( \frac{1}{s^2} + \frac{1}{s_1^2} \right),$$

$$7 = -\sqrt{\frac{n}{4}} \circ_{\mu} u^2 \left\{ \sqrt{\frac{m}{M}} \cdot \frac{n}{s^2} + (u - v_0) \cdot \frac{n_0}{n_0} \cdot \left( \sqrt{\frac{m}{M}} \cdot \frac{1}{s^2} + \frac{1}{v_1^2} \right) \right\}, \quad (18)$$

Then the instability condition is  $v_0 - u > \frac{u_0 u v^3 v_0^3}{u_0^3}$  (19)

A. I. Akhiyezer is thanked for advice. There are 7 references: 6 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: I. B. Bernstein, R. M. Kulsrud. Phys. Fl., 2, 937, 1960.

SUBMITTED: January 31, 1961 (initially)
May 3, 1961 (after revision)

Card .5/5

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	Interaction of charges with an electron plasma in a magnetic field.  [MIRA 15:7]  Dokl.AN SSSR 145 no.21305-308 Jl 162.
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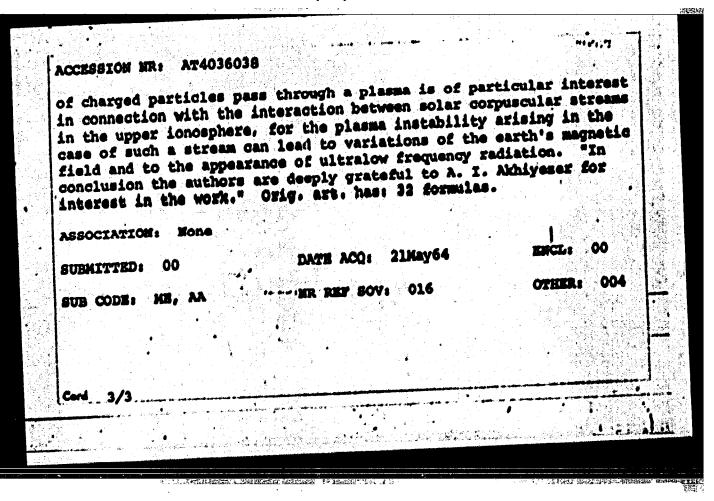
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namic waves in interpenetrating plasma streams with nonisotropic particle velocity distribution functions, are considered on the basis of the quasihydrodynamic equations. It is confirmed on the basis of these equations that one-dimensional Langmuir oscillations of an electron gas can be regarded as adiabatic with an adiabatic exponent y = 3. The effects of the ions on both high-frequency and low-frequency oscillations are considered. It is shown that anomalous dispersion occurs in both frequencies. In a plasma consisting of two species of ions, plasma resonance in the region of both high and low frequencies has the same distinguishing features, namely the limitation of the growth of the refractive index because of the presence of thermal motion of the plasma particles, and the appearance of a new branch of oscillations (plasma waves) with anomalous dispersion properties. An experimental investigation of the propagation of radio waves through a plasma at resonance makes it possible to determine several important characteristics of the plasma. The excitation of magnetohydrodynamic waves when streams

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ANGELEYKO, V.V. [Anheleiko, V.V.], KITGENKO, A.B. [Kitaenko, O.B.]

Excitation of sound waves in a weakly ionized plasma. Ugr. fiz. (MIRA 18:4)

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1. Fiziko-tekhnicheskiy institut AN UkrSSE, Khar\*kov.

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AUTHOR: Angeleyko, V.V.; Kitsento, A.B.

TITLE: On the cyclotron excitation of magneto-ecountic veves by a strong of

charged particles

SOURCE: Zhurnal tekhnicheskoy fiziki, v.35, no.3, 1965, 470-474

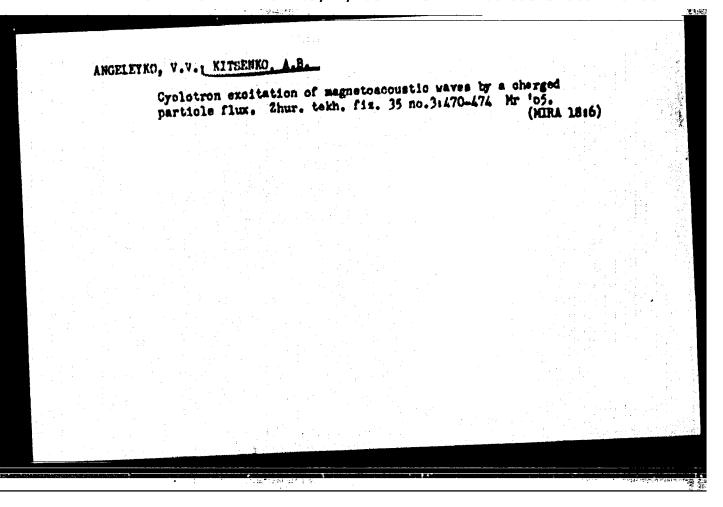
TOPIC TAGS: plasma beam interaction, plasma stability, magnetic sound wave, cyclo-

tron resonance

ABSTRACT: The authors discuss the interaction of a neutral stresm of charged particles with the low frequency oscillations (fast and slow magneto-acoustic waves) of a highly anisothermal plasma in an external magnetic field. The magnetic and kinetic pressures are assumed to be of the same order of magnitude, and the interaction is discussed in the neighborhood of the cyclotron resonance under conditions of the anomalous Doppler effect. The relevant dispersion equation is quoted from earlier work (K.N.Stepanov and A.B.Kitsenko, ZhTF 31,167,1961) and is simplified for the case in which the frequency is low compared with the ion Larmor frequency and the phase velocity is high compared with the ion thermal velocity and low compared

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RG: none  ITIE: Howement of streams of charged particles through a plasma at an arbitrary andle relative to the internal magnetic field  OURCE: AN UkrSSR. Vzaimodeystviye puchkov zaryzzhennykh chastits s plazmoy (Interaction of charged particle beams with plasma). Kiev, Naukova dumka, 1965, 131-136  COPIC TAGS: plasma magnetic field, charged particle, electron oscillation  ABSTRACT: The excitation of high frequency electron oscillations by a relativistic charged particles moving in an arbitrary direction relative to the internal charged field is studied. The main interaction effect is assumed to take place where the wave frequency exceeds the cyclotron frequency of the beam and the wavelength is shall compared with the cyclotron radius. The analysis of the tensor giving the dismall compared with the cyclotron radius. The analysis of the tensor giving the dismall compared with the cyclotron radius. The analysis of the tensor giving the dismall compared with the cyclotron radius. The analysis of the tensor giving the dismall compared with the cyclotron radius. The analysis of the tensor giving the dismall compared with the cyclotron radius. The analysis of the tensor giving the dismall compared with the cyclotron radius. The analysis of the tensor giving the dismall compared with the cyclotron radius. The analysis of the tensor giving the dismall compared with the cyclotron radius. The analysis of the tensor giving the dismall compared with the cyclotron radius. The analysis of the tensor giving the dismall compared with the cyclotron radius. The analysis of the tensor giving the dismall compared with the cyclotron radius. The analysis of the tensor giving the dismall compared with the cyclotron radius. The analysis of the tensor giving the dismall compared with the cyclotron radius.	O8805-67 EWT(1) IJP(e) AT/GD SOURCE CODE: UR/0000/6 OTHOR: Kitsenko, A. B.; Gapontsev, B. A.	
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ACC NR. AT6020444 AUTHOR: Angeleyko, V. V.; Kitsenko, A. B.  ORG: none  TITLE: Excitation of longitudinal oscillations in a magnetoactive plasma  SOURCE: AN UKYSSR. Vzaimodeystviye puchkov zaryazhennykh chastits s plazmoy (Intersource)  source: AN UKYSSR. Vzaimodeystviye puchkov zaryazhennykh chastits s plazmoy (Intersource)  source: AN UKYSSR. Vzaimodeystviye puchkov zaryazhennykh chastits s plazmoy (Intersource)  source: AN UKYSSR. Vzaimodeystviye puchkov zaryazhennykh chastits s plazmoy (Intersource)  source: AN UKYSSR. Vzaimodeystviye puchkov zaryazhennykh chastits s plazmoy (Intersource)  source: AN UKYSSR. Vzaimodeystviye puchkov zaryazhennykh chastits s plazmoy (Intersource)  topic TAGS: magnetoactive plasma in Cerenkov rediation, Doppler affect, plasma oscillation, place instability and plasma is malyzed and the excitation of longitudinal oscillations in a plasma consisting of two types of ions through which a stream of particles is moving under macronic in a plasma ratitrary angle to the direction of the internal magnetic field. The dispersion relation is written consisting of lation for the plasma is analyzed and the relationship between its four roots is studial lation for the plasma is analyzed and the relationship between its four roots is studial lation for the plasma and the added term for the beam and for the interaction affects.  This relationship is studied for the case of a cold stream under the conditions of the interaction with the plasma is briefly discussed. The instability criteria and growth rates for the various waves is given under speci-  Cord 1/2	L 08804-67 EWT(1) IJP(a) AT/QD SOURCE CODE: UR/0000/65/000/000/0136/	0143
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TOPIC TAGS: magnetoactive plasma, Cerenkov rediction, Doppler effect, plasma oscillation, plasma instability  ABSTRACT: This work investigates the excitation of longitudinal oscillations in a plasma consisting of two types of ions through which a stream of particles is moving under an arbitrary angle to the direction of the internal magnetic field. The dispersion relation for the plasma is analyzed and the relationship between its four roots is studied. In the presence of the stream, a new dispersion relation is written consisting of that for the plasma and the added term for the beam and for the interaction effects. In the presence and for the case of a cold stream under the conditions of anomalous Dopthis relationship is studied for the case of a cold stream under conditions of anomalous Dopthis relationship is studied for the case of a cold stream under conditions of anomalous Dopthis relationship is studied for the case of a cold stream under conditions of anomalous Dopthis relationship is studied for the case of a cold stream under conditions of anomalous Dopthis relationship is studied for the case of a cold stream under conditions of anomalous Dopthis relationship is studied for the case of a cold stream under conditions of anomalous Dopthis relationship is studied for the case of a cold stream under conditions of anomalous Dopthis relationship is studied for the case of a cold stream under conditions of anomalous Dopthis relationship is studied for the case of a cold stream under conditions of anomalous Dopthis relationship is studied for the case of a cold stream under the conditions of anomalous Dopthis relationship is studied for the case of a cold stream under the conditions of anomalous Dopthis relationship is studied for the case of a cold stream under the conditions of anomalous Dopthis relationship is studied for the case of a cold stream under the conditions of anomalous Dopthis relationship is studied for the case of a cold stream under the conditions of anomalous Dopthis relationship is studi	TITLE: Excitation of longitudinal oscillations in a magnetic s plazmoy (Int	ter-
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KITSENKO, A.V., veterinarmy vrach

Episootiology of anaplasmosis in cattle. Veterinariia
(MIRA 18:11)
41 no.11:44-45 N '64.

1. Khoresmskaya oblastnaya veterinarnaya laboratoriya.

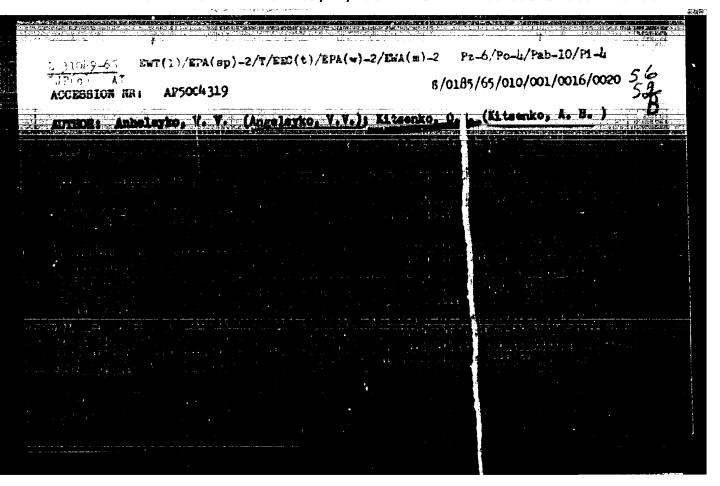
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AFDERS, Aleksandr Aleksandrovich; KITERMICO, M.P., insh., retsensent;
SMIRHOV, B.V., insh., Fed.; FRENINGOF, V.A., red.isd-ve;
SOKOLOVA, T.F., tekhn.red.

[Technology of machining] Tekhnologiia mekhanicheskoi obrabotki;
abornik madach. Ind.2., perer. i dop. Noskva, Gos. nauchno-tekhn.
ind-vo mashinostroit. lit-ry, 1958. 352 p.

(Machine-shop practice)

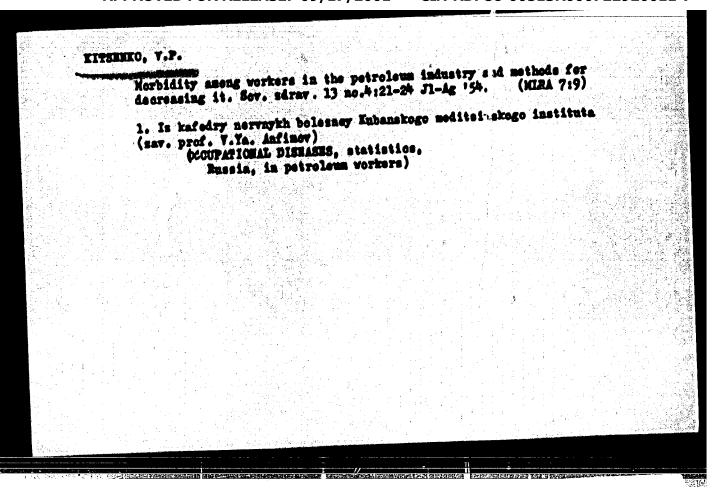
(Machine-shop practice)

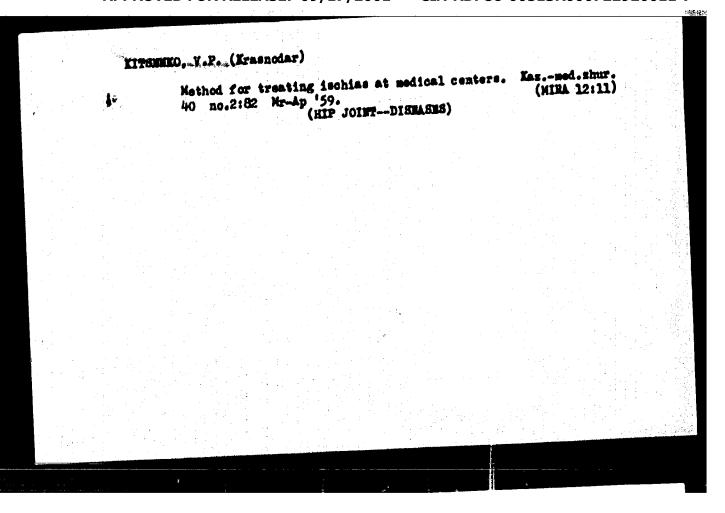


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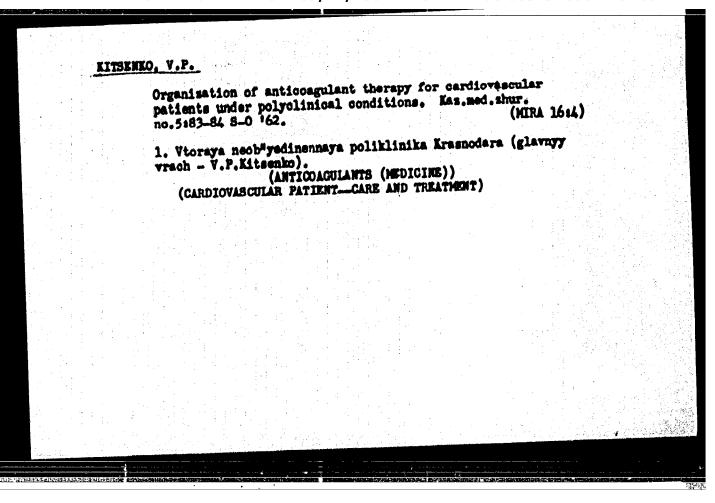
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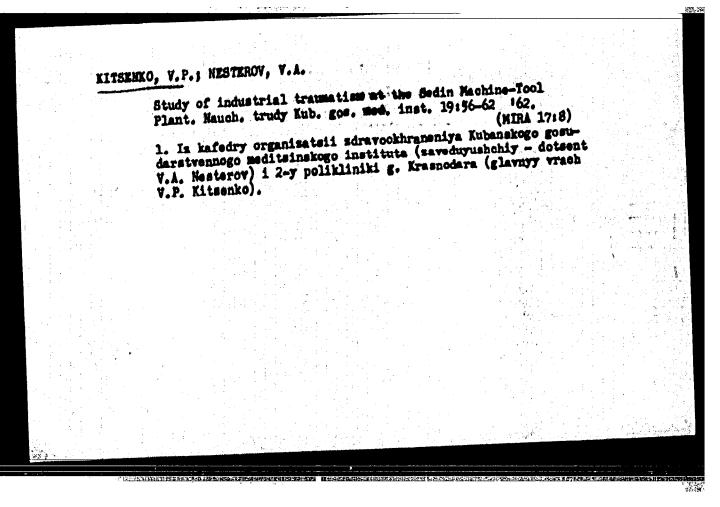
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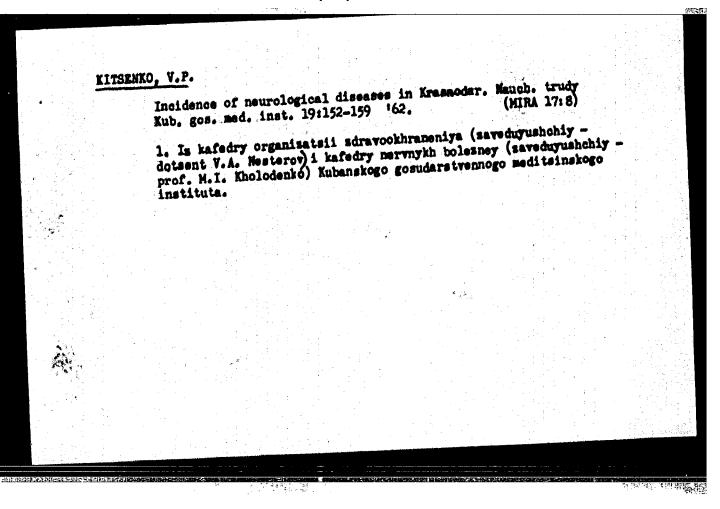


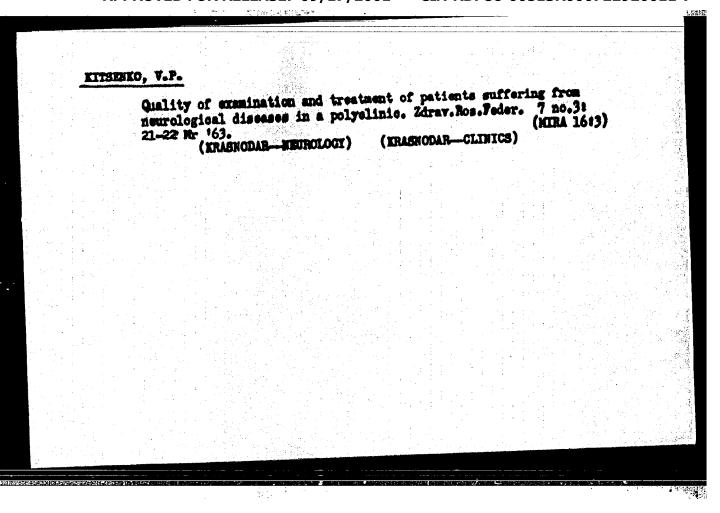


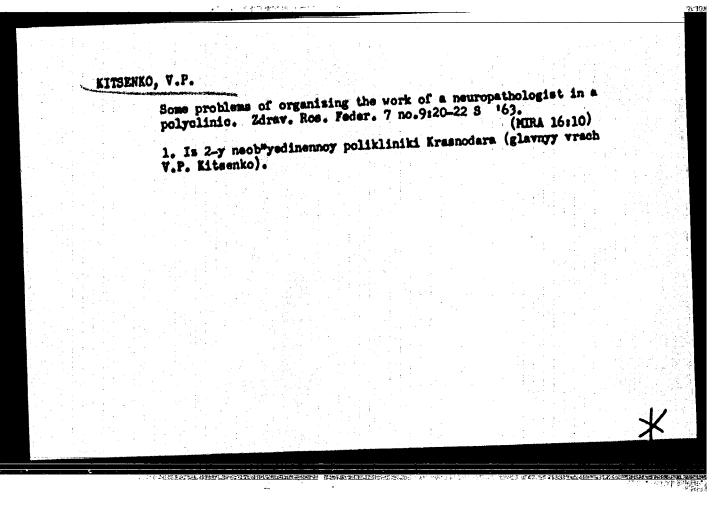
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CONCHAROV. S.P.; KITSERCO. V.V.; MARGULIS, A. I.; CHERRYAVSKIY. L.G.;
RZHAVSKIY, W.A., KARNIGAT tekhnicheskikh neuk, redaktor; MARKUS,
M. Te., inshener, redaktor; MATVEYEVA, Ye.B., tekhnicheskiy
redaktor; SOKOLOVA, T.F., tekhnicheskiy redaktor.

[Measurements of strains and stresses; handbook] Isserenie napriashenii i usilii; spravochnoe posobie. Moskva, Gos. nauchnotekhn.isd-vo mashinostroit. lit-ry, 1955. 66 p. (MLRA 8:9) (Strains and stresses)

KONOPLEY, Yu.V.; KITSENKO, Yu.A.; KALICHENKO, B.V.

Using the pulse neutron-neutron logging method in studying the possibility of determining the water-oil contact in horizon 4 of the Anastasiyevka-Troitskoye oil field. Geol. nefti i gaza 9 no.4144-48 Ap 165. (MIRA 18:8)

1. Krasnodarskiy filial Vsesoyuznogo nauchno-issledovateliskogo instituta geofizicheskikh metodov razvedki i Neftepromyslovoye upravleniye Priasovnefti.

計算時期 153

L 33265-66 EWT(m) ACC NRI AT6012791 SOURCE CODE: UR/3175/66/000/027/0141 AUTHOR: Kitsenko, Yu. A.; Konoplev, Yu.V. (Krasnodarskiy filial VNIIGeofisiki) ORG: Krasnodar Division, VNIIGeofisika TITLE: Introduction of the oil well impulse neutron generator IGN-1 A SOURCE: USSR, Gosudarstvennyy geologicheskiy komitet. Osoboye konstruktorskoye byurd Geofizicheskaya apparatura, no. 27, 1966, 141-145 TOPIC TAGS: Aneutron, petroleum industry equipment, temperature instrument/ IGN-1 petroleum industry equipment ABSTRACT: This paper describes modifications of the oil well neutron impulse generator IGN-1, done locally to improve field operations under higher temperatures. To decrease heat generation, permanent magnets were substituted for the electromagnet of the ion source of the accelerating tube; oil volume was decreased by redesign, to utilize the available expansion sylphone at higher temperatures; teflon insulated wires installed etc. To improve the registration effectiveness, the thermal neutron counter SNH-201 was replaced by SNH-20a, Dehich required a higher voltage supply. Delay times, channel sensitivities and integration times were modified to increase measurement effectiveness. Tests showed stable operation in oil wells at 70°C. (Design of the IGN-1 apparatus in its entirety is not described, Abstractor). Orig. art. has 4 figures. SUB CODE: /3; // /4 SUB DATE: None/ ORIG REF: 000

VOLOVIE, T.M. [Volovyk, 2.M.]; ETTERA, 1.To, [Kiteme, L.O.]

Some charges in memory block No.5 of the magnetic drim in the electronia computer Theolale, Vienyk Liviv, un, See, makin-mat, no.2154-56 65.

(KIRA 1802)

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## KITSIS, G.M.

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1 akush. 28 no.5:50-51 35-43. (MIRA 16:7)

1. Is Orgeysvakoy rayonnoy bol'nitsy, Moldavskaya SSR. (MEDICAL RECORDS)

KITSIS,	o.n. and the second department of the second	
	Medical documentation at feldsher and obstetric renenie 4 no.6:42-44 N-D 161.	stations. Zdravookh- (MIRA 15:2)
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ROZET, G.I., dotsent; ALRHAN-KEMAL, G., vrach-metodist; KITSIS, G.N.;
RRILOV, P.M.

Letters to the editor. Zdrav.Ros.Feder. 6 no.11:35-37 N '62.
(MIRA 15:12)

1. Zaveduyushchiy kabinetom ucheta i meditsinskoy statistiki
Orgeyevskoy rayonnoy bol'nitsy Moldavskoy SSR (for Kitsis).
(PUBLIC HEALTH) (VISHNEVSKII, PETR SIEPAROVICH)

COLOVINA, Ye. M.; KITSIS, G.N...

Methodological center at a district hospital. 2dravookhranani/e
6 no.518-9 8-0163 (MIRA 16:12)

1. Is orgeyevskoy rayonnoy bol'nitsy (glavnyy vrach Ie.M. Golovina).

## KITSIS, C.N. (g. Orgeyev)

Planning a network of public health institutions in a district. Sovet. sdravockhr. 5:45-47 163 (MIRA 17:2)

1. Is Orgeyevskoy rayonnoy bol'nitsy Moldavskoy SSR (glavnyy vrach Ye.M.Golovina).

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計學問對對歌語

KOZIOV, Sidor Fedorovich; PAVLTUKEVICH, Aleksandr Ivamovich; KITSIS, M.S., red.; GRIGOR'YEVA, T.S., red. isd-va; EELOGUROVA, I.A., tekhn.red.

[Hard-alloy cutting tools for the machining of light alloys]Tverdo-splavny' reshaphohie instrumenty dlia obrabotki legkikh splavov.

Leningrad, 1962. 22 p. (Leningradskii dom nauchno-tekhnisheskoi propagandy. Otmen peredovya opytom. Serila: Mekhanicheskaia obrabotka metallov, no.25)

(MIRA 16:2)

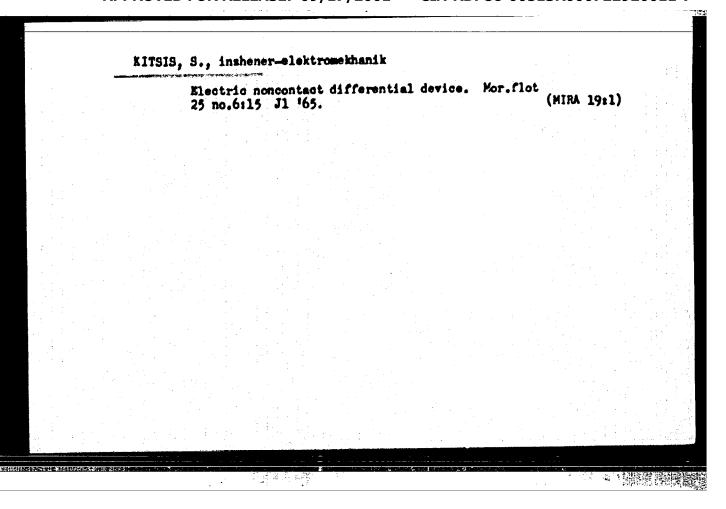
(Hetal-cutting tools)

VERIOIN, N.N., prof.; Primisali Unhastiyei KITSIS, R.A., insh.;
ZHIQALIN, B.I., insh.; AFINOGRIOVA, H.V., insh.;
VINOGRADOVA, G.M., red. inf-va; KARIMOV, D.Za., tekhm. red.

[Methods of determining the filtration properties of rocks]
Metody opredelenias filtrationwyth svoistv gornyth porod.
Moskva, Gos. inf-vo litrary po stroit., arkhit. i stroit. materials. 1962. 177 p.

1. Moscov. Vsesoyussyy nsuchno-issledovatel'skiy institut vodo-snabsheniya, kamalizatai, gidrotekhmicheskikh soorushemiy i inshenernoy gidrogeologii.

(Rocks—Permeability)



Treatment of clays at the Erichev cement plant. Thement 24 no.1:24-26 Ja-Fe '58. (NIRA 11:4)

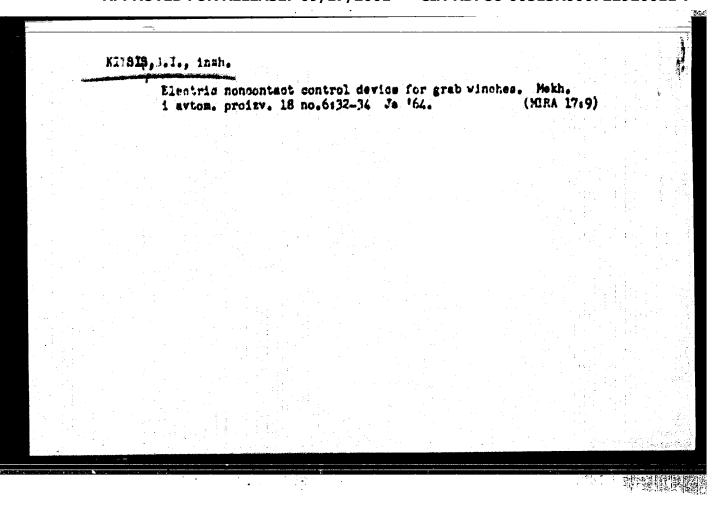
1.Kriohevskiy tsementnyy savod. (Erichev—Cement) (Clay)

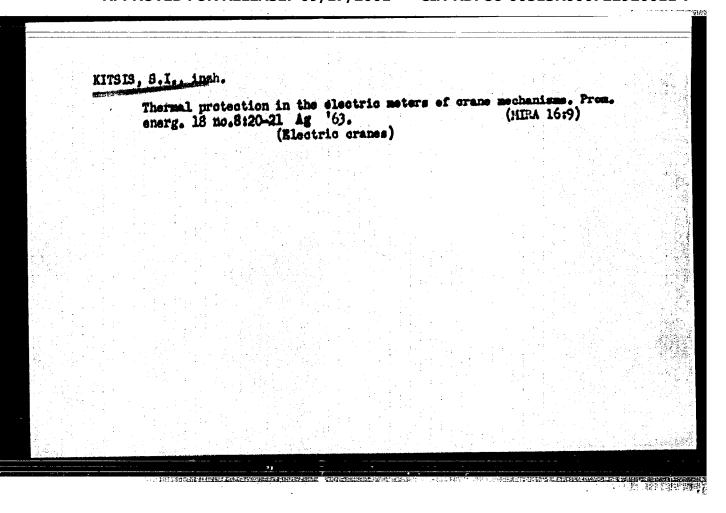
ALESHIMA, O.K., insh.; KITSIB, S.B., insh.; SHAKHMAGON, N.V., insh.; ENTIN, Z.B., insh.

Using sodium fluosilicate as a mineraliser at the Krichev Cessent Pebtory. Mauch. socb. MIITSemends no. 7:1-4 '60. (MIRA 14:5) (Sodium fluosilicates) (Cessent climbers)

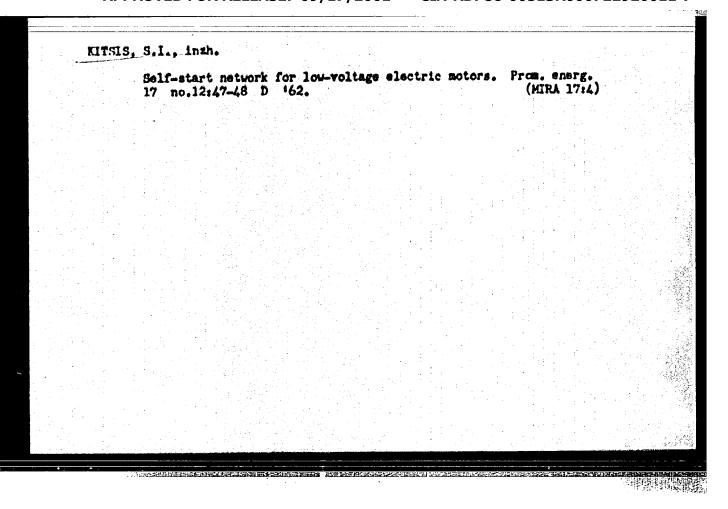
KITSIS, S.I., insh. Automation of hoisting machinery. Mekh.i avtom.proisv. 17 no.7:30-32 Jl '63. (Hoisting machinery) (Automatic control) (MIRA 16:8)

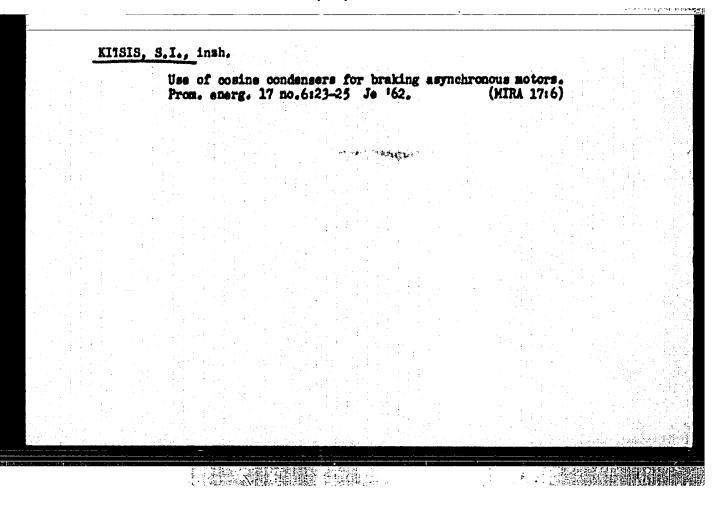
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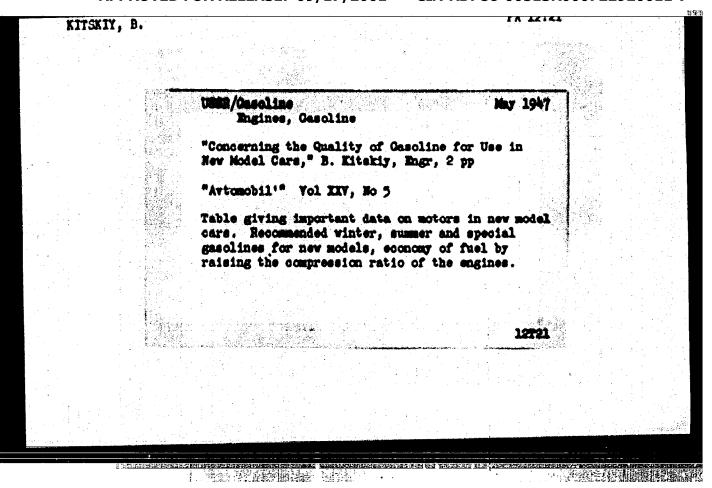


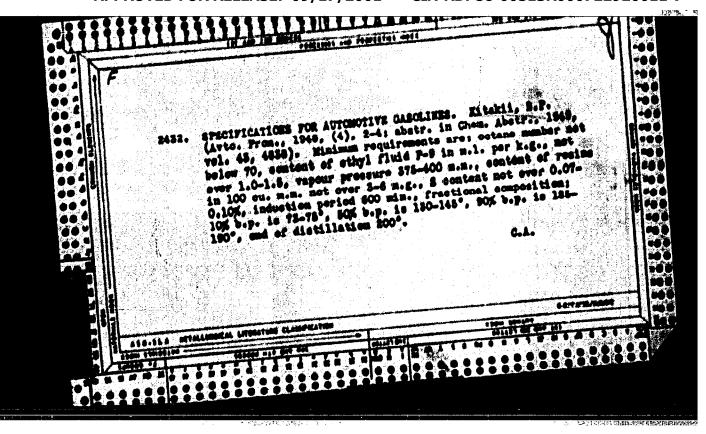


kitsis,	, 8.), insh.		
	Heat insulation of the electric drives of crane mechanisms. 22 no.3:13-14 Mr 163. (Electric cranes) (Insulation (Heat))	Rech. 16:4)	trabsp.









VOINCY, N. P.; KONEY, B. P.; KITSKIY, B. P.

KITSKIY, B. P.

Toplivo i Smarks Otechestvennyth Legkovtkh Avtomobilei (Fuel and Oil for Fatherland Light Automobiles), State Scientific-Technical Publ. House of Petroleum and Ground-fuel Lit., Moscow-Leningrad, 1951.

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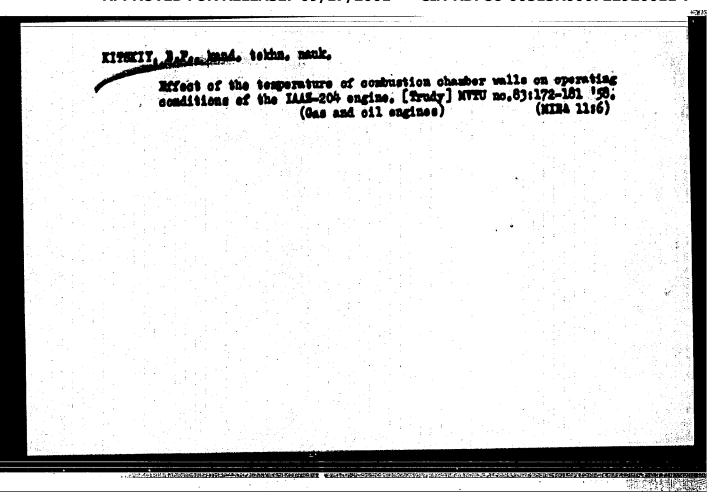
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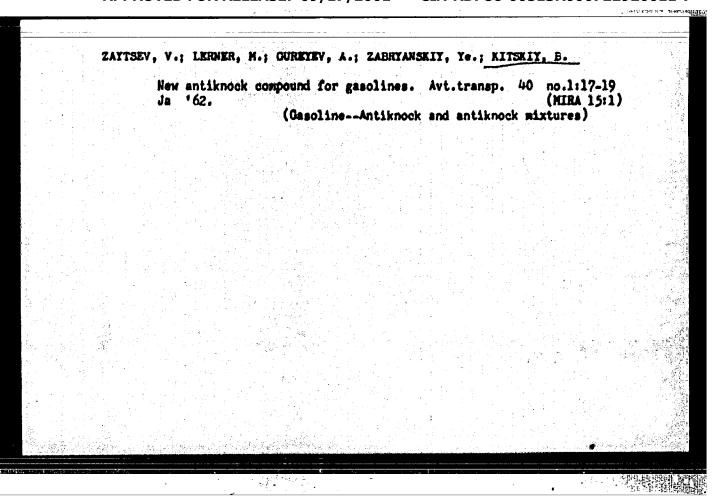
KITSKIY, B. P.

Kitskiy, B. P.

"The effect of the temperature of the walls of the combustion chamber on certain parameters of the operating cycle of a two-stroke high-speed engine with straight exhaust flow." Min Higher Education USSR. Foscow Order of Lenin and Order of Labor Red Banner Higher Technical School imeni Bauman. Moscow, 1956. (Dissertation for the Degree of Candidate in Technical Sciences).

No. 25, 1956. Moscow





ANDROMIKASHVILI, B.L., akademik; BUDA, B.G.; DEVNOZASHVILI, D.S.; KIKNADZE, G.I., KITSMARISHVILI, E.S.; TOPSHYAN, L.S.; CHANTURIYA, V.M.

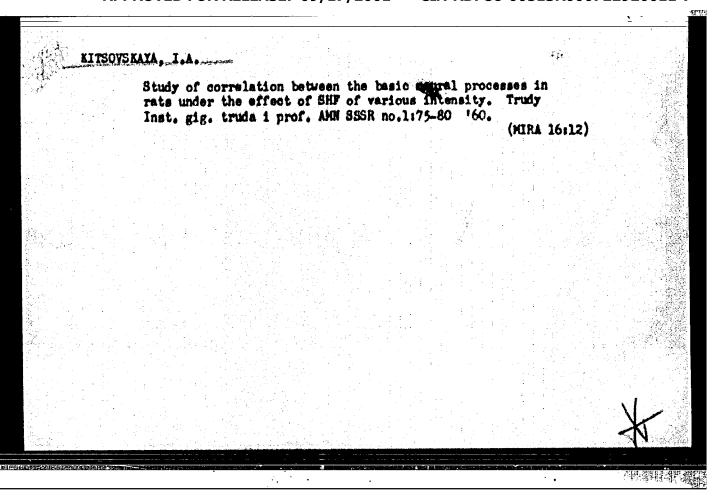
Low-temperature loop of an IRT-2000 reactor. Soob. AM Grus. SSR 34 no.1:45-52 Ap 64 (MIRA 17:7)

1. AN Grusinskoy SSR (for Andronikashvili).

# KITSNIK, A.; KOCH, R., kand. tekhn. nauk

Organic matter and mineral contents in the various grammlometric classes of pulverised kukersite. Isv. AN Est. SSR. Ser. fis.-mat. i tekh.nauk no.41312-318 \*64. (MIRA 18:4)

1. Institut khimii A' Estonskoy SSR.



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" Acades	t the Institute only of Medical Boi waves of small in	f Labor Rygiene and ences USSR, Moscow - tensity"	Professional D "Biological e	iseases, ffects of	
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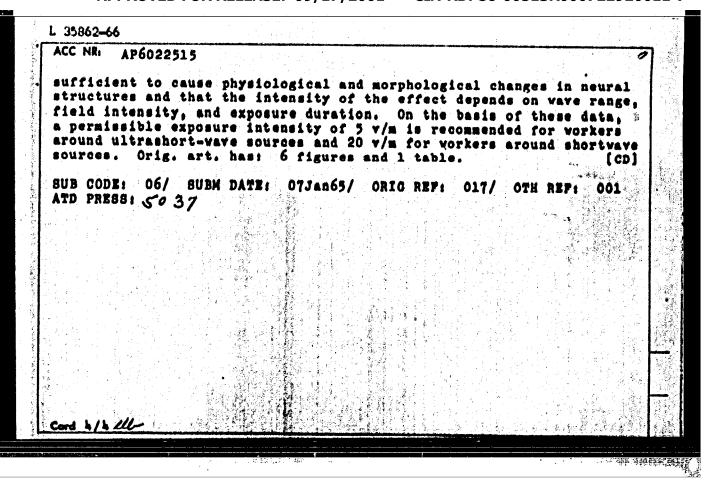
862-66 AP6022515 SOURCE CODE: UR/0391/66/000/007/0005/0009 AUTHOR: Fukalova, P. P. (Moscov); Tolgskaya, N. S. (Moscov); Wikogosyan, S. V. (Moscow); Kitsovskaya, I. A. (Moscow); Zenina, I. W. (Moscov) ORO: Institute of Industrial Hygiene and Occupational Diseases, AMN 888R (Institut gigiyeny; truda i professolevaniy AMN 888R) TITLE: Research data on the standardization of EMF's in the short- and ultrashort-vave ranges SOURCE: Gigiyena truda i professional'nyye zabolevaniya, no. 7. 1966, 5-9 TOPIC TAGS: microvave, microvave biologic effect, central nervous system, UHF, human physiology, animal physiology, animal experiment, industrial hygiene ABSTRACT: In a survey of radio and television stations and establishments which process dielectrics thermally, measurements using various dosimeters showed that field intensities around short- and ultrashort-wave sources were 8-450 v/m and 4-220 v/m, respectively. The reaction speed and accuracy were studied in personnel exposed to Card 1/4 UDC: 613.647

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and the development of fatigue. To study the mechanism of the effect of EMP's, animals were exposed to 14, 88, and 69.7 Mc fields (5000 v/m intensity). Animals in the ultrashort-wave range were Lilled within 5 min, while those in the shortwave range died in 1 hr and 40 min. Nonthermal (no integral thermal effect such as increased body temperature) threshold intensity for the ultrashort-wave range was 150 v/m and for the shortwave range, 2250 v/m. Chronic exposure to these intensities (plus exposure to an ultrashort-wave intensity of 300 v/m) did not result in any substantial changes in body weight dynamics compared to control animals. However, a decrease in brain-stem cholinesterase activity occurred more rapidly during exposure to ultrashort waves than exposure to short waves. Both regimens decreased the excitability and weakened the inhibition process in chronically exposed rats. Such exposure also tended to depress brain biopotentials progressively. ultrashort-wave intensity of 10 v/m and shortwave intensity of less than 50 v/m is a subthreshold irritant. Photos show the results of a cytomorphological examination of neural structures in exposed animals which revealed thickening of neural fibers, swelling and vacuolisation of cell protoplasm in the thalamo-hypothalamic area and medulla oblongata, and local karyocytolysis of individual neurons. Shriveling of individual pyramid cells and individual vacuoles in neurons of the brain cortex was noted. Thus, it was found that an ultrashort-wave intensity of 150 v/m and a shortwave intensity of 2250 v/m is more than Card 3/4



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SOURCE CODE: UR/0271/66/000/001/B003/B003

AUTHOR: Kisel', V. A.; Kitsul, I. V.

30

TITLE: Trigonometric interpolation with multiple equidistant nodal points

SOURCE: Ref. zh. Avtomat. telemekh. i vychisl. tekhn., Abs. 1B20

REF SOURCE: Tr. uchebn. in-tov svyazi. M-vo svyazi SSSR, vyp. 24, 1965, 169-

176

TOPIC TAGS: polynomial, interpolation, harmonic function, approximation method

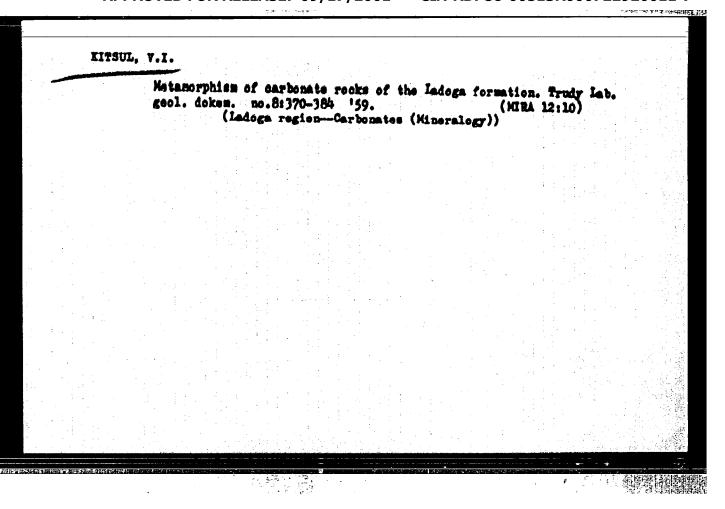
ABSTRACT: A method is analyzed for plotting the trigonometric polynomials which for interpolating the values of a given function and values of its derivatives in equidistant modal points. Three cases are analyzed: when an interpolating function is of even parity, odd parity, and random. The given solution can be used for calculating the harmonic corrections, vocoders, and synthesizers, as well as equipment, the calculation of which is based on an approximation of the given function and its derivatives of trigonometric polynomials. Orig. art. has: 1 figure. [NT] SUB CODE: 12/

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TITLE: Corre	ct methods of usi	ng communication	e equipment	
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I.S., KITSUL, V. I.				: . : :: 1
A deposit of platinum in no.4174-84 J1-Ag '60.	the Aldan shield.	Geol. rud. (NIRA 13:	mestorosh. 8)	
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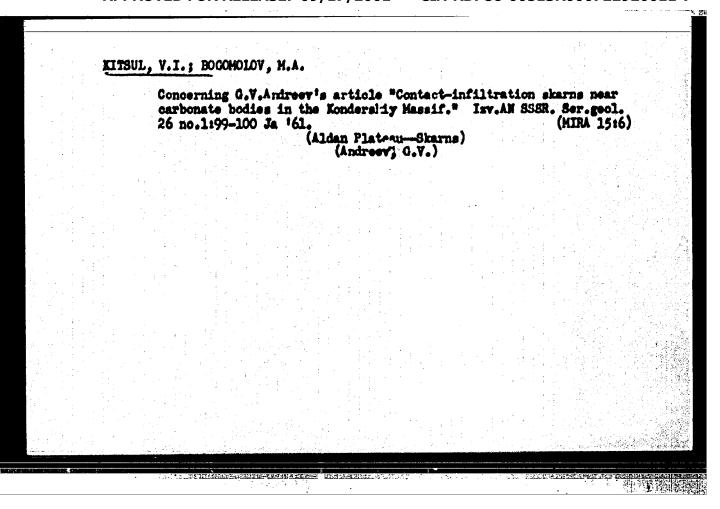
ROZHKOV, I.S., glav. red.; KITSUL, V.I., kand. geol.-miner. nauk, otv. red.

[Petrography of the metamorphic and igneous rocks of the Aldan Shield] Petrografiia metamorficheskikh i izversher. nykh porod Aldanskogo shchita. Moskva, Nauka, 1964. 163 p. (MIRA 17:8)

1. Akademiya nauk SSSR. Takutskiy filial, Takutsk. Institut geologii. 2. Chlen-korrespondent AN SSSR (for Rozhkov).

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KITS	UL, V.I.
	Grades of the progressive regional metamorphism of carbonate rocks in the Ladoga formation. Trudy Lab. gool. doken. no.11:230-239 160. (MIRA 14:1)
	(Ingoda Inke region-Rocks, Carbonate)
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KITSUL. Vasiliy behavioh; SUDOVIKOV, M.C., prof., otv. red.;

KALANTAROV, A.P., red. isd-ws; GUSEVA, A.P., tekha. red.

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